UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

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MONTHLY NEWS LETTER

Washington, D. C., March 20, 1926.

The Accounts Office has recently made the following suggestion regarding telegrams.

"When the commercial rate is paid by an employee he should make claim for that amount in his reimbursement account, calling attention to the amount paid, and this office will then collect from the Western Union the difference between the Government and commercial rates, and forward it to Mr. Zappone as a conceded disallowance on the reimbursement voucher in which payment of such telegram was made."

The Department of Agriculture plans to have quite an extensive exhibit in connection with the Sesquicentennial which is scheduled to open at Philadelphia on July 1. This Division has been allotted a space in which, in cooperation with the Bureau of Home Economics, it is planned to exhibit a small model of an ideal farm house and, in connection with this, such part of the interior, built on natural scale, as the available space permits. The interior will be furnished and equipped for housekeeping by the Bureau of Home Economics.

March 1 - 3 the Advisory Council of the College Section of the American Society of Agricultural Engineers, held their annual meeting in Washington, at our office. This has been an annual event for the last five years.

P. A Ewing, H.F. Blaney, and Frank Adams attended an informal meeting in Los Angeles February 23, at which steps were taken to form an association of Governmental, State, and private research offices engaged in the collection of agricultural and industrial statistics and other economic data in California, with the purpose of effecting a better coordination of such investigations than now exists. Further steps to carry out this purpose will be taken at another meeting to be held soon at San Francisco.

Some interesting figures are available on the roughness coefficient secured in the investigations of C.E. Ramser, at Cape Girardeau, Missouri, and P. T. Simons, at McGehee, Arkansas. Mr. Ramser reports on the value "n" for Sals Creek channel adjoining the Little River Drainage District in southeastern Missouri. The figures given below show the value of "n" for the channel as originally excavated with explosives, and after being somewhat enlarged and smoothed up, principally by hand labor. In its original condition the perimeter of the channel consisted of rough, jagged, projecting rocks as shattered by the explosives.

SALS CREEK CHANNEL

AVERAGE MAX. DEPTH OF WATER ALONG SLOPE COURSE (FEET)	CROSS-SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT. SEC.)	"N" IN KUTTER'S FORMULA
	CHANNEL AS ORIGINALLY EXCAVATED		
5.6	46.2	3.46	.042
5.9	48.4	3.68	.0395
	CHANNEL AS ENLARGED AND SMOOTHED UP		
2.5	35.6	3.23	.0304
2.9	42.0	3.48	.0310
3.1	45.0	3.485	.0309

P. T. SIMONS REPORTS THE FOLLOWING RESULTS OF MEASUREMENTS ON CUMMINS DITCH, NORTHEAST OF GOULD, ARKANSAS.

CUMMINS DITCH

DATE 1925	GAGE HEIGHT	MEAN VELOCITY	"N"
MAY 11	6.6	.83	.056
MAY 12	4.2	.55	.073
NOV. 7	8.6	1.21	.070
NOV. 11	7.3	1.21	.067
DEC. 14	6.2	1.33	.053
1926			
JAN. 21	10.1	1.82	.052
JAN. 21	10.2	1.73	.055
JAN. 22	9.4	1.48	.058

THIS CHANNEL WAS CONSTRUCTED IN 1924 THROUGH SILT LOAM. IT IS U-SHAPED, 65 FEET WIDE AT TOP AND 15 FEET AT BOTTOM. THERE ARE 2 ROWS OF WILLOWS IN THE CHANNEL AT THE EDGES OF THE LOW WATER CHANNEL, EACH ROW ABOUT 3 FEET WIDE WITH WILLOWS LESS THAN 1 FOOT APART. THE ROWS ARE FROM 23 TO 28 FEET APART, THE WIDTH OF THE LOW-WATER STREAM. IN MAY, 1925, THE WILLOWS WERE 2 TO 8 FEET HIGH WHILE IN NOVEMBER AND DECEMBER THEY WERE 10 TO 15 FEET HIGH. WHEN THE NOVEMBER GAGINGS WERE MADE MOST OF THE FOLIAGE WAS ON THE WILLOWS AND OTHER VEGETATION WAS IN THE CHANNEL, WHILE IN DECEMBER THERE WAS PRACTICALLY NO FOLIAGE OR VEGETATION IN THE CHANNEL.

MR. BLANEY HAS SENT TO THE BERKELEY OFFICE A PUBLICATION ENTITLED "COMPILATION OF OFFICIAL DOCUMENTS RELATING TO THE PROBLEMS OF THE LOWER COLORADO RIVER," COMPILED BY THOMAS C. YAGER, ESQ. THIS CONTAINS THE TEXTS OF TREATIES AND CONVENTIONS BETWEEN THE UNITED STATES AND MEXICO, MESSAGES TO CONGRESS FROM PRESIDENTS ROOSEVELT AND TAFT, DOCUMENTS EMANATING FROM DEPARTMENTS OF THE AMERICAN AND MEXICAN GOVERNMENTS, CONTRACTS, COURT ORDERS, ETC. AND AN OPINION BY PHIL D. SWING ON THE INTERNATIONAL TREATIES.

E. J. HOFF IS GATHERING INFORMATION ON WATER STAGE REGISTERS FOR THE PURPOSE OF DESIGNING A STANDARD INSTRUMENT SUITABLE FOR ALL ORDINARY

PURPOSES ON IRRIGATION AND DRAINAGE PROJECTS. THE REGISTER MUST BE: (1) SIMPLE IN CONSTRUCTION AND EASILY ACCESSIBLE AT ALL POINTS; (2) CONVENIENT IN OPERATING; (3) CAPABLE OF GIVING RECORDS OF LARGE OR SMALL CHANGES IN WATER STAGES AS WELL AS FOR SHORT OR LONG PERIODS OF OBSERVATION; (4) SENSITIVE, BUT DEFINITE IN ACTION AND CORRECT IN TIME; (5) PROOF AGAINST RAIN, DUST, AND INSECTS; (6) VENTILATED TO PREVENT COLLECTION OF MOISTURE FROM TEMPERATURE CHANGES; (7) PORTABLE.

THE APPARATUS ARRANGED BY MESSRS. PARSHALL AND ROHWER AT THE FORT COLLINS, COLO. COOPERATIVE LABORATORY FOR THE PURPOSE OF TESTING OUT THE POSSIBILITY OF MAINTAINING AN EVAPORATING WATER SURFACE AT A CONSTANT LEVEL, APPEARS, AFTER A PERIOD OF SIX WEEKS, TO HOLD THIS WATER SURFACE APPROXIMATELY CONSTANT, THE VARIATION BEING NOT MORE THAN 0.01 INCH. RECENTLY THE EVAPORATING PAN WAS FILLED WITH SAND SCREENED THROUGH A #20 SIEVE AND FILLING THE BASIN, WHICH IS 1 FOOT SQUARE, LEVEL FULL. EVAPORATION LOSSES UNDER THIS CONDITION, WITH THE WATER TABLE AT A DEPTH OF 1 INCH, SEEM TO BE PRACTICALLY THE SAME AS INDICATED FOR THE FREE WATER SURFACE, ALTHOUGH SUFFICIENT DATA HAVE NOT YET BEEN OBTAINED TO STATE DEFINITELY THE EXACT RELATION.

IN MAKING A STUDY OF THE EFFECT OF TEMPERATURE ON THE EVAPORATION EQUIPMENT AT THE FORT COLLINS LABORATORY, CARL ROHWER FINDS THAT THE TEMPERATURE CORRECTIONS ORDINARILY ARE NOT OF SUFFICIENT MAGNITUDE TO REMOVE THE INCONSISTENCIES IN THE DATA. HE FOUND THAT BY TAKING MEAN VALUES, THE TEMPERATURE EFFECT COULD BE ELIMINATED WITHOUT MAKING THE TEDIOUS TEMPERATURE CORRECTIONS. MR. ROHWER HAS STARTED A SERIES OF EXPERIMENTS ON THE EVAPORATION FROM ICE UNDER STILL AIR CONDITIONS, DETERMINING THE LOSSES BY WEIGHT. ALTHOUGH SUFFICIENT DATA HAVE NOT YET BEEN OBTAINED TO DRAW DEFINITE CONCLUSIONS, IT IS INTERESTING TO NOTE THAT THESE LOSSES SO FAR OBSERVED ARE SOMETIMES EQUAL TO THE EVAPORATION FROM WATER.

L. M. WINSOR HAS GIVEN ADVICE TO THE SETTLERS AT SPRING CITY AND CHESTER, UTAH, RELATIVE TO THE BEST PROCEDURE IN COMPLETING THE PLAN OF CONSOLIDATION OF ALL THE IRRIGATION INTERESTS ON THE STREAM SUPPLYING WATER TO THESE TWO COMMUNITIES. THIS WAS ORIGINALLY UNDERTAKEN IN 1922 AND WAS PARTIALLY COMPLETED IN 1924 THROUGH THE UNIFICATION OF 47 DITCHES AT SPRING CITY UNDER ONE SYSTEM AND IN CHANGING THE PLAN OF ORGANIZATION FROM SUPERVISION OF THE SYSTEM BY THE CITY COUNCIL TO THE "MUTUAL COMPANY" FORM OF ORGANIZATION.

D. W. BLOODGOOD HAS COMPUTED RESULTS OF OBSERVATIONS OF TEST WELLS AT VARIOUS POINTS ACROSS THE MIDDLE RIO GRANDE VALLEY, NEW MEXICO, IN ORDER TO DETERMINE THE RELATIONSHIP BETWEEN THE WATER TABLE AND THE GROUND SURFACE ELEVATION AT VARIOUS STAGES. THE SANDOVAL COUNTY LINES SHOW THE AVERAGE FLUCTUATION OF THE WATER TABLE TO BE 2.50 FEET, AVERAGE MINIMUM DEPTH TO WATER TABLE 1.28 FEET, AND AVERAGE DEPTH TO WATER TABLE 2.59 FEET. THE HIGH WATER TABLE STARTS IN APRIL, REACHES THE HIGHEST POINT IN MAY, AND BEGINS TO DROP IN JUNE. THE LOW WATER TABLE OCCURS IN SEPTEMBER AND OCTOBER AND PART OF NOVEMBER. THERE APPEARS TO BE NO RELATIONSHIP BETWEEN PRECIPITATION AND WATER TABLE, BUT THERE IS A DIRECT RELATIONSHIP BETWEEN RIVER DISCHARGE AND WATER TABLE. AS A GENERAL RULE THE WATER TABLE FOLLOWS THE TOPOGRAPHY OF THE GROUND SURFACE, ESPECIALLY WHERE THE WATER TABLE IS CLOSE

TO THE SURFACE. DIFFERENT STRATA OF SOILS ALSO SEEM TO INFLUENCE THE RISE AND FALL OF THE WATER TABLE TO A CERTAIN EXTENT. A SUMMARY FOR BERNALILLO COUNTY, ON THE WEST SIDE OF THE RIVER, SHOWS THE AVERAGE MAXIMUM FLUCTUATION OF THE WATER TABLE TO BE 2.42 FEET, AVERAGE MINIMUM DEPTH TO THE WATER TABLE 0.91 FEET AND THE AVERAGE DEPTH TO THE WATER TABLE 2.16 FEET. ON THE EAST SIDE OF THE RIVER THE AVERAGE MAXIMUM FLUCTUATION WAS 2.10 FEET, AVERAGE MINIMUM DEPTH 1.50 FEET AND AVERAGE WATER TABLE 2.49 FEET. FOR THE WHOLE COUNTY AND REGARDLESS OF LOCATION OF THE RIVER, THE AVERAGE MAXIMUM FLUCTUATION WAS 2.10 FEET, AVERAGE MINIMUM DEPTH 1.39 FEET, AND AVERAGE DEPTH TO THE WATER TABLE 2.38 FEET.

ON THE HELMS TRACT IN IDAHO, TEST PITS HAVE BEEN PREPARED UNDER JAMES C. MARR'S SUPERVISION TO MAKE POSSIBLE CLOSE OBSERVATION OF SOIL MOISTURE AND GROUND WATER. A COMPLETE MAPPING OF SURFACE SOIL AS INDICATED BY ORIGINAL GROWTH AND COLOR AND TEXTURE OF THE SOIL HAS BEEN COMPLETED FOR 20 ACRES, WHICH AREA WILL BE DEVOTED TO ALKALI RECLAMATION EXPERIMENTS DURING THE COMING YEAR.

A. T. MITCHELSON VISITED POINTS IN SEVERAL SOUTHWESTERN STATES IN ORDER TO OBTAIN DATA ON CANAL CLEANING AND MAINTENANCE OF CANALS, BEING ASSISTED IN CALIFORNIA BY H. F. BLANEY AND IN NEW MEXICO AND WESTERN TEXAS BY D. W. BLOODGOOD. MR. MITCHELSON REPORTS THAT, AS IS NOW WELL KNOWN, THE LAND DRAINAGE SYSTEM OF SALT RIVER PROJECT, ARIZONA, CONSISTS OF PUMPING FOR DRAINAGE AND REUSING THE WATER TO SUPPLEMENT THE IRRIGATION SUPPLY, AND THAT THE VALUE OF THIS UNDERGROUND SUPPLY MAY BE APPRECIATED BY A DIGEST OF THE REPORT OF CONDITIONS OF AVAILABLE WATER SUPPLY ON FEBRUARY 6, 1926, OR DURING A RELATIVELY INACTIVE IRRIGATION PERIOD. ON THAT DATE THE COMBINED AMOUNT OF WATER IN STORAGE IN THE TWO RESERVOIRS WAS 164,485 ACRE-FEET, WITH A COMBINED STORAGE CAPACITY OF 1,731,300 ACRE-FEET, AND THE DRAFT ON THE RESERVOIRS ON THAT DATE WAS 810 ACRE-FEET. THE PUMPED SUPPLY ON THE SAME DATE WAS 724 ACRE-FEET, OR ABOUT 47% OF THE WATER USED FOR IRRIGATION. IF IT WERE NOT FOR THE UNDERGROUND SUPPLY, THE WATER IN THE RESERVOIRS WOULD SOON BE EXHAUSTED.

MR. KELLEY HAS COMPLETED THE MANUSCRIPT FOR A BULLETIN ON THE SUBJECT OF VENTILATION FOR FARM STRUCTURES. THIS IS PIONEER WORK AND IS BASED ON DATA SECURED IN BARNS IN THE NORTHERN UNITED STATES.

A MOTION PICTURE FILM ON THE SUBJECT OF THE USE OF EXPLOSIVES FOR LANDCLEARING IS JUST BEING COMPLETED. THIS FILM ILLUSTRATES THE PROCEDURE IN BLASTING STUMPS AND BOWLDERS AND IN PARTICULAR EMPHASIZES SAFETY.

MR. BETTS READ A PAPER BEFORE THE NATIONAL FARM HOME CONFERENCE WHICH MET IN CHICAGO DURING FEBRUARY, OUTLINING THE GENERAL NEED OF ADAPTING THE PLAN OF A HOUSE TO THE MODE OF LIVING SO AS TO INCREASE EFFICIENCY, COMFORT AND ECONOMY.